REMARKS

Claims 1-31 are pending in this application. By this Amendment, the specification and claims 1, 7, 8, 14, 15, 21 and 22 are amended and new claims 26-31 are amended. Attached hereto is a marked-up version of the changes to the specification and claims by the current amendment. The attachment is captioned "Version With Markings To Show Changes Made". The amendments to independent claims 1, 8, 15 and 22 are for clarity, and for reasons unrelated to patentability.

The Office Action indicates that applicants are required to spell out the terms NGIO and VI in claim 7. By this amendment, each of dependent claims 7, 14 and 21 are amended to spell out the respective terms.

The Office Action rejects claims 1-6, 8-13, 15-20 and 22-25 under 35 U.S.C. § 102(b) by U.S. Patent 5,771,356 to Leger et al. (hereafter Leger). The Office Action also rejects claims 7, 14 and 21 under 35 U.S.C. § 103(a) over Leger in view of U.S. Patent 6,170,025 to Drottar et al. (hereafter Drottar). The rejections are respectfully traversed.

The present specification describes problems involving movement of data between two memory regions. For example, because of hardware limitations with NGIO, VI and Infiniband architectures, a remote direct memory access (RDMA) operation may create a request larger than that supported by the underlying hardware and software. See page 2, lines 5-16 of the present specification. Accordingly, embodiments may provide a method and system by which multiple

RDMA requests to a single, remote memory buffer can be merged (or coalesced) together into one operation to thereby provide a better performance system. See page 5, lines 13-21.

Independent claim 1 recites receiving a remote direct memory access (RDMA) request and associating the first buffer region with a first transfer operation. Independent claim 1 further recites determining whether a size of the first buffer region exceeds a maximum transfer size of the networked system, and associating portions of the second buffer region with the first transfer operation if the determining determines that the size of the first buffer region is less than the maximum transfer size and associating portions of the second buffer region with a second transfer operation if the determining determines that the size of the first buffer region exceeds the maximum transfer size. Claim 1 also recites performing the first transfer operation.

Leger does not teach or suggest all the features of independent claim 1. Leger does not relate to remote direct memory access (RDMA) requests. Rather, Leger merely involves data transfer across a system bus such as a PCI bus. Leger has no teaching or suggesting for remote direct memory access (RDMA) requests. RDMA is a specific type of request that is not suggested by Leger's data management mechanism. See page 14, lines 13-17 of the present application. The Office Action references Leger's col. 9, lines 32-65 as teaching these features. However, this clearly is not related to RDMA requests.

Additionally, Leger does not teach or suggest a first buffer region and a second buffer region in combination with the determining and associating features

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recited in independent claim 1. For example, Leger does not teach or suggest

determining whether a size of a first buffer region exceeds a maximum transfer size

of the network system as recited in independent claim 1. The Office Action

references Leger's column 2, line 51 to column 3, line 13; and column 8, lines 20-41

as showing these features. However, these sections of Leger merely relate to

monitoring and adjusting the threshold levels of a buffer based on actual bus

activities. This may be done so that another device may share the system bus and

the bus may be more efficiently utilized (i.e. balance the bus activities). This is not

determining whether a size of the first buffer region exceeds a maximum transfer

size. Leger's column 8, lines 20-41 also merely shows that the data is read/written

to addresses between the values of start_haddr and end_haddr. This is not

determining whether a size of the first buffer region exceeds a maximum transfer

size.

Leger also does not teach or suggest associating portions of the second

buffer region with the first transfer operation if the determining determines that the

size of the first buffer region is less than the maximum transfer size and associating

portions of the second buffer region with a second transfer operation if the

determining determines that the size of the first buffer region exceeds the first

maximum transfer size. Leger does not relate to associating portions of a second

buffer region with either a first or second transfer operation. Rather, Leger operates

by transferring data and based on whether certain conditions or meant, may allow

another device to transfer data on the system bus. See Leger's col. 7, lines 54-63.

Accordingly, Leger does not teach or suggest all of the features of independent claim 1. For at least similar reasons, Leger does not teach or suggest all the features of independent claims 8, 15 and 22. Each of independent claims 1, 8, 15 and 22 therefore define patentable subject matter. Claims 2-7 and 26-28 depend from claim 1, claims 9-14 depend from claim 8, claims 16-21 and 29-31 depend from claim 15, and claims 23-25 depend from claim 22 and therefore define patentable subject matter at least for this reason.

In addition, the dependent claims also recite features that further and independently distinguish over the applied reference(s). For example, dependent claim 2 (and similarly dependent claims 9, 16 and 23) relates to the RDMA request being a read operation. Similarly, dependent claim 4 (and similarly dependent claims 11, 18 and 25) relates to the RDMA request being a write operation. As discussed above, Leger does not relate to RDMA requests and therefore does not teach or suggest read or write operations (as the RDMA request). Each of dependent claims 2, 4, 9, 11, 16, 18, 23 and 25 defines patentable subject matter at least for this additional reason. Each of claims 3, 5, 10, 12, 17 and 19 depends from one of these claims and therefore defines patentable subject matter at least for this additional reason.

Additionally, dependent claim 7 recites that the networked system comprises one of a Next Generation (NGIO) system, a Virtual Interface (VI) system and an Infiniband system. The Office Action indicates that Leger does not teach or suggest these features. The Office Action then relies on Drottar as teaching one of an NGIO system, a VI system and an Infiniband system. However, the Leger and Drottar

systems may not be combined as alleged. That is, Leger's system provides a methodology for managing a FIFO buffer coupled to a system bus. On the other hand, Drottar relates to an NGIO architecture. The parameters, system requirements and connections of an NGIO system are much different than that suggested in Leger. That is, Leger cannot be simply combined within an NGIO system because different data communications (such as RDMA requests) are utilized in an NGIO system. Leger has no comprehension of these communications. Leger (and the other known art) does not teach or suggest these modifications. Any such modification of Leger would involve a restructuring of circuit components, their interaction among each other and the utilization of different communication techniques. There is no suggestion for this modification. Further, the Office Action does not provide any motivation to make such a combination. As such, the Office Action fails to make a prima facie case of obviousness.

Additionally, Drottar appears to be cited as prior art based on 35 U.S.C. § 102(e). However, 35 U.S.C. § 103(c) states that subject matter developed by another person which qualifies as prior art only under one or more subsections (e), (f) and (g) of Section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. Applicants respectfully submit that both the present application and Drottar are both assigned to Intel Corporation (and were previously assigned to Intel Corporation at the time of the invention). Therefore, since an obviousness rejection was made under 35 U.S.C. § 103(c) based on 35 U.S.C.

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§ 102(e), <u>Drottar may not be used as prior art due to 35 U.S.C. § 103(c)</u>. Drottar

should be appropriately disqualified as prior art. Withdrawal of the rejection of

claims 7, 14 and 21 (based on the combination with Drottar) is respectfully

requested.

Dependent claim 26 (and similarly dependent claim 29) recites that the local

system comprises a first computer system and the remote system comprises a

second computer system. Dependent claim 27 (and similarly dependent claim 30)

further recites that performing the first transfer operation comprises performing the

first transfer operation from the first computer system across a computer network to

the second computer system. For similar reasons as set forth above, Leger does

not teach or suggest each of these features of dependent claims 26 and 27. That is,

Leger does not teach or suggest communication between separate computer

systems. Rather Leger only relates to communication across a system bus. This is

different than communications between computer systems and across computer

networks. Thus, dependent claims 26 and 27 (and similarly dependent claims 29

and 20) define patentable subject matter for at least this additional reason.

Additionally, dependent claim 28 (and similarly dependent claim 31) recites

that associating portions of the second buffer region with the first transfer operation

occurs prior to performing a first transfer operation. That is, the Office Action alleges

that Leger's column 2, line 51 to column 3, line 13 and col. 7, lines 40-63 teaches

the claimed associating the first buffer region with the first transfer operation. As

discussed above, these sections relate to adjustment of thresholds based on actual

bus use. That is, this adjustment of the threshold appears to take place as data is

actually being transferred across the bus. Any alleged associating is therefore not prior to a first transfer operation   Therefore, Leger does not teach or suggest that the associating portions of the second buffer region with the first transfer operation occurs prior to performing the first transfer operation as recited in dependent claim 28. Thus, dependent claim 28 (and similarly dependent claim 31) defines patentable subject matter at least for this additional reason.

For at least the reasons set forth above, it is respectfully submitted that each of claims 1-31 defines patentable subject matter. Withdrawal of the outstanding rejections is respectfully requested.
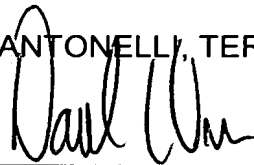

CONCLUSION

In view of the foregoing, it is respectfully submitted that the above-identified application is in condition for allowance. Favorable consideration and prompt allowance of claims 1-31 are earnestly solicited.

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to the Deposit Account No. 01-2135 (Case No. 219.38416X00), and please credit any excess fees to such Deposit Account.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The paragraph beginning on page 9, line 8 has been amended as follows:

The ~~multi-state~~ <u>multi-stage</u> switches fabric 100' may include a central network manager 250 connected to all the switches for managing all network management functions. However, the central network manager 250 may alternatively be incorporated as part of either the host system 20, the second network 150, the I/O unit 170, or the remote system 30 for managing all network management functions. In either situation, the central network manager 250 may be configured for learning network topology, determining the switch table or forwarding database, detecting and managing faults or link failures in the network and performing other network management functions.

IN THE CLAIMS:

Claims 1, 7, 8, 14, 15, 21 and 22 have been amended as follows:

1.   (Amended) A method of transferring data in a networked system between a local memory in a local system and a remote memory in a remote system, the local memory including at least a first buffer region and a second buffer region, the method comprising:

receiving a remote direct memory access (RDMA) request;

associating the first buffer region with a first transfer operation;

determining whether a size of the first buffer region exceeds a maximum transfer size of the networked system;

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associating portions of the second buffer region with a first transfer operation

if the determining determines that the size of the first buffer region is less than the

maximum transfer size and associating portions of the second buffer region with a

second transfer operation if the determining determines that the size of the first

buffer region exceeds the maximum transfer size; and

performing the first transfer operation.

7.   (Amended)   The method of claim 1, wherein the networked system

comprises one of [an] a Next Generation (NGIO) system, a Virtual Interface (VI)

system and an Infiniband system.

8.   (Amended) A tangible medium storing a plurality of program

instructions, the program instructions causing a networked system to carry out a

method of transferring data between a local memory in a local system and a remote

memory in a remote system, the local memory including at least a first buffer region

and a second buffer region, the method comprising:

receiving a remote direct memory access (RDMA) request;

associating the first buffer region with a first transfer operation;

determining whether a size of the first buffer region exceeds a maximum

transfer size of the networked system;

associating portions of the second buffer region with a first transfer operation

if the determining determines that the size of the first buffer region is less than the

maximum transfer size and associating portions of the second buffer region with a

second transfer operation if the determining determines that the size of the first

buffer <u>region</u> exceeds the maximum transfer size; and

performing the first transfer operation.

14.   (Amended)   The tangible medium of claim 8, wherein the networked

system comprises one of [an] <u>a Next Generation (NGIO)</u> system, a <u>Virtual Interface</u>

<u>(VI)</u> system and an Infiniband system.

15.   (Amended) A system for transferring data in a networked system

between a local memory in a local system and a remote memory in a remote

system, the local memory including at least a first buffer region and a second buffer

region, the system comprising:

a receiving device that receives a remote direct memory access (RDMA)

request;

an RDMA managing device that receives the RDMA request, the RDMA

managing device determining whether a size of the first buffer region exceeds a

maximum transfer size of the networked system, the RDMA managing device

associating portions of the second buffer region with a first transfer operation if the

RDMA managing device determines that the size of the first buffer region is less

than the maximum transfer size and associates portions of the second buffer region

with a second transfer operation if the RDMA managing device determines that the

size of the first buffer <u>region</u> exceeds the maximum transfer size; and

a transferring device that performs the first transfer operation between the local memory and the remote memory.

21.   (Amended)   The system of claim 15, wherein the networked system comprises one of [an] a Next Generation (NGIO) system, a Virtual Interface (VI) system and an Infiniband system.

22.   (Amended)   A system for transferring data in a networked system between a local memory in a local system and a remote memory in a remote system, the local memory including at least a first buffer region and a second buffer region, the system comprising:

a processor that receives a remote direct memory access (RDMA) request, the processor determining whether a size of the first buffer region exceeds a maximum transfer size of the networked system, the processor associating portions of the second buffer region with a first transfer operation if the processor determines that the size of the first buffer region is less than the maximum transfer size and associates portions of the second buffer region with a second transfer operation if the processor determines that the size of the first buffer region exceeds the maximum transfer size; and

an input/output device that performs the first transfer operation between the local memory and the remote memory.